

Letter from Alexander Graham Bell to Alexander Melville Bell, Eliza Symonds Bell, Carrie Bell, Charles Bell, May 6, 1874, with transcript

Salem, Mass., May 6th, 1874. Dear Papa, Mamma, Carrie, and Charley,

I was rather in low spirits when I wrote to you last, as I was not very well, and so spoke of pecuniary matters as if they were very bad. This is not the case. I do not receive anything from Miss Locke. So, if I put together what she has received from me and what I have received — the receipts have been very fair and show prospects of unlimited increase in the future. If I had felt it prudent to take all work upon myself — I should, of course, have had all the pay, and could have had a surplus over now. It is advisable however for me to continue to offer inducements to Miss Locke to remain in Boston, because more pupils are coming in, and she is very valuable to me in exemplifying the system. I must try to retain her until it can be possible for me to make Charlie a definite offer.

I made use of Mr. Niven's letter at the lecture and I shall return it to you this evening. The only time I can find for a long letter to you is during the journey from Salem to Boston. I think by utilizing this time I can be more regular in my correspondence.

I am very hard pressed just now with my article on Lip-Reading. In addition to this I have been experimenting with Prof. Cross, and Mr. Morey at the Instit. of Technology. These experiments are important. 2 A lecture is to be given before the Society of Arts upon König's "Phonautograph", and "Manometric Flame", and I am invited to be present and state the results of these experiments. This will be the stepping-stone to another lecture on V.S. before the same society. I have myself made several "Phonautographs" with different shaped styles — and I have obtained much better results than those I sent you. The curves are due to the vowels — although the proper vibration of the style must affect

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the result somewhat. If we can make the instrument delicate enough to give a constant form for each sound what grand practical results would ensue. Take for example the “Manometric Flame” referred to in a former letter. If we can find the definite shape due to each sound — what an assistance in teaching the deaf & dumb!!

Let them experiment before the revolving mirrors until they see the same shape produced by their voice — that is produced by their teachers! In like manner in any future publication concerning Visible Speech — pictures of the vibrations due to each sound could be given, and thus the sounds be identified through all eternity.

I shall show how we are varying the experiments.

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In the Phonautograph as made by Konig the style is impeded by the friction of the glass plate along which it scratches its way — and so the resulting curves are small and perhaps untrustworthy.

If the style is allowed to vibrate freely, as in the above sketch — the amplitude of the vibration (a b) is more than half an inch.

I tried the effect of placing the vibrating end in front of a slit in a piece of Card board through which a light was allowed to shine, and then viewed the reflection of the slit in the revolving mirrors.

When the style was at rest — on turning the mirrors the reflection of the slit looked like a bright ribbon of flame with a black line drawn along the middle (due to the style which intercepted the light)

On singing a vowel into the mouth piece the style vibrated and the black line became bent into waves 4 and each sound had its own appropriate curve. Prof. Cross has invited me to go to the Institute on Saturday morning, to try the effect of the Oxy-hydrogen light instead

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of the candle. We hope to be able to throw the reflection of the waves from the mirrors on to a screen and thus enlarge the curves ad lib.

I made a style of a wheat-straw and, with my razor, shaved it as fine as a hair. It was thrown into vibration like a string. The free end vibrated through a space of nearly an inch — and I could see a difference in the shape of the vibration for each sound.

With three dark lines made their appearance The middle one being near the top — as I said the centre line moved downwards and with it was By saying the middle line jumped up and down while the other two remained still.

Reached Boston — With much love Aleck. Note: Original in pencil.